

REMARKS

In the Non-Final Office Action, Examiner Cattungal rejected pending claims 1-20 on various grounds. The Applicant responds to each rejection as subsequently recited herein, and respectfully requests reconsideration of the present application:

- A. Examiner Cattungal rejected claims 1-10, 13-16, 18 and 20 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Publication No. 2005/0107688 to *Strommer et al.*

The Applicant has thoroughly considered Examiner Cattungal's remarks concerning the patentability of claims 1-10, 13-16, 18 and 20 over *Strommer*. The Applicant has also thoroughly read *Strommer*. To warrant this §102(e) rejection of claims 1-10, 13-16, 18 and 20, each and every element as set forth in the independent claims 1, 5 and 13 must be either expressly or inherently described in *Strommer*. See, MPEP §2131. The Applicant respectfully traverses this §102(e) rejection of independent claims 1, 5 and 13, because *Strommer* fails to describe, expressly or inherently, the following limitations of independent claims 1, 5 and 13 as amended herein and supported by page 2, line 31 to page 3, line 7 of the present application:

1. "the sorting being based on at least one similarity of at least one characteristic attribute of the vessel between the further local image and one or more of the local images of the sequence" as recited in independent claim 1;
2. "sorting a further local image, which is made by the sensor probe, into the sequence based on at least one similarity of at least one characteristic attribute of the vessel between the further local image and one or more of the local images of the sequence" as recited in independent claim 5; and

3. “sorting the further local image into the sequence based on at least one similarity of at least one characteristic attribute of the vessel between the further local image and one or more of the local images of the sequence” as recited in independent claim 13.

As to the traversal, a careful review of *Strommer* reveals *Strommer* teaches delivering a stent (i.e., a medical device as recited in claims 5-20 herein) to a selected position within a lumen (i.e., vessel as recited in claims 1-20 herein) by a graphic designation on an image of the lumen of (1) a selected position of the stent within the lumen and (2) an indication when the stent has reached the selected position. This is accomplished by use of a medical positioning system (“MPS”) constantly detecting the position of the stent relative to the selected position as represented on the image of the lumen. For example as shown in FIG. 6 of *Strommer*, a MPS sensor 210₁ is attached to a catheter 222 delivering the stent, a MPS sensor 210₂ is attached to an image transducer 218, a MPS sensor 210₃ is attached to an operating table, and a MPS sensor 210_N is attached to a patient 216 to thereby constantly detect the position of the stent relative to the selected position. See, *Strommer* at paragraphs [0058] and [0110]-[0116].

Further review of *Strommer* reveals the fact that the only image sorting activity taught by *Strommer* is for purposes of reconstructing a three-dimensional (“3D”) image of a volume from a sequence of two-dimensional (“2D”) images derived from a transducer moving within the lumen and from the 3D location and orientation of the sequence of 2D images obtained from MPS sensors. Specifically, as shown in FIG. 9, *Strommer* teaches an internal transducer 254 (FIG. 7A) for capturing a sequence of 2D images 252A-252S as transducer 254 is moved within a vessel and detected via MPS sensors 258 and 260 (FIG. 7A). The capturing of these 2D images 252A-252S are synchronized with an organ timing signal 272. To reconstruct a 3D image of a volume, the sequence of 2D images 252A-252S is sorted into volumes 274A-274D as shown in FIG. 10A based on the synchronized timing position of each 2D image relative to an organ timing signal 272. The timing position of each 2D image is either organ timing signal cycle location T, 1/4T, 1/2T or 3/4T. As shown in FIGS. 10B and 10C, this sorting serves as the basis

for the reconstruction and updating of 3D volumes 276 in view of the 3D location and orientation of each 2D image 252 obtained from the MPS sensors 258 and 260. See, Strommer at paragraphs [0128]-[0149].

In the context of properly understanding the only sorting activity of *Strommer*, the Applicant respectfully asserts that *Strommer* unequivocally fails to describe, expressly or inherently, sorting a further 2D image into the sequence of 2D images 252A-252S, particularly based on one or more similarities of “one or more characteristic attributes” of the volume between the further 2D image and one or more of the 2D images 252A-252S (e.g., shape and diameter of the lumen, thickness of the walls of the volume, deposits on the walls of the volume, surrounding tissue, etc. as taught by the present application on page 2, line 31 to page 3, line 7). Furthermore, the Applicant respectfully asserts that *Strommer* unequivocally fails to describe, expressly or inherently, positioning a stent within a lumen based entirely or partially on the sorting of the further 2D image into the sequence of 2D images 252A-252S. The reason for these description failures by *Strommer* is *Strommer* is based on using MPS sensors for detecting the position of the stent within the lumen as opposed to sorting further 2D images of the lumen into a sequence of 2D images for positioning the stent within the lumen.

Withdrawal of the rejection of independent claims 1, 5 and 13 under 35 U.S.C. §102(e) as being anticipated by *Strommer* is therefore respectfully requested.

Claims 2-4 depend from independent claim 1. Therefore, dependent claims 2-4 include all of the elements and limitations of independent claim 1. It is therefore respectfully submitted by the Applicant that dependent claims 2-4 are allowable over *Strommer* for at least the same reason as set forth herein with respect to independent claim 1 being allowable over *Strommer*. Withdrawal of the rejection of dependent claims 2-4 under 35 U.S.C. §102(e) as being anticipated by *Strommer* is therefore respectfully requested.

Claims 6-10 depend from independent claim 5. Therefore, dependent claims 6-10 include all of the elements and limitations of independent claim 5. It is therefore respectfully submitted by the Applicant that dependent claims 6-10 are allowable over *Strommer* for at least the same reason as set forth herein with respect to independent claim 5 being allowable over

Strommer. Withdrawal of the rejection of dependent claims 6-10 under 35 U.S.C. §102(e) as being anticipated by *Strommer* is therefore respectfully requested.

Claims 14-16, 18 and 20 depend from independent claim 13. Therefore, dependent claims 14-16, 18 and 20 include all of the elements and limitations of independent claim 13. It is therefore respectfully submitted by the Applicant that dependent claims 14-16, 18 and 20 are allowable over *Strommer* for at least the same reason as set forth herein with respect to independent claim 13 being allowable over *Strommer*. Withdrawal of the rejection of dependent claims 14-16, 18 and 20 under 35 U.S.C. §102(e) as being anticipated by *Strommer* is therefore respectfully requested.

- B.** Examiner Cattungal rejected claims 11, 12 and 19 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Publication 2005/0107688 to *Strommer* et al. in view of U.S. Patent Publication No. 2003/0199767 to *Cespedes* et al.

Claims 11 and 12 depend from independent claim 5. Therefore, dependent claims 11 and 12 include all of the elements and limitations of independent claim 5. It is therefore respectfully submitted by the Applicant that dependent claims 11 and 12 are allowable over *Strommer* in view of *Cespedes* for at least the same reason as set forth herein with respect to independent claim 5 being allowable over *Strommer*. Withdrawal of the rejection of dependent claims 11 and 12 under 35 U.S.C. §103(a) as being unpatentable over *Strommer* in view of *Cespedes* is therefore respectfully requested.

Claim 19 depends from independent claim 13. Therefore, dependent claim 19 includes all of the elements and limitations of independent claim 13. It is therefore respectfully submitted by the Applicant that dependent claim 19 is allowable over *Strommer* in view of *Cespedes* for at least the same reason as set forth herein with respect to independent claim 13 being allowable over *Strommer*. Withdrawal of the rejection of dependent claim 19 under 35 U.S.C. §103(a) as being unpatentable over *Strommer* in view of *Cespedes* is therefore respectfully requested.

- C. Examiner Cattungal rejected claims 11, 12 and 19 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Publication 2005/0107688 to *Strommer et al.* in of a NPL entitled "Towards Real-Time Multi Modality 3D Medical Image Registration" to *Weese et al.*

Claim 17 depends from independent claim 13. Therefore, dependent claim 17 includes all of the elements and limitations of independent claim 13. It is therefore respectfully submitted by the Applicant that dependent claim 17 is allowable over *Strommer* in view of *Weese* for at least the same reason as set forth herein with respect to independent claim 13 being allowable over *Strommer*. Withdrawal of the rejection of dependent claim 17 under 35 U.S.C. §103(a) as being unpatentable over *Strommer* in view of *Weese* is therefore respectfully requested.

SUMMARY

The Applicant respectfully submits that claims 1-20 as listed herein fully satisfy the requirements of 35 U.S.C. §§102, 103 and 112. In view of the foregoing, favorable consideration and early passage to issue of the present application is respectfully requested. If any points remain in issue that may best be resolved through a personal or telephonic interview, Examiner Cattungal is respectfully requested to contact the undersigned at the telephone number listed below.

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